

KUDREV, T.; TYANKOVA, L. [Tiankova, L.]

Effect of indole-3-acetic acid and 2,4-dichlorophenoxyacetic acid on the productivity of the plants exposed to drought spells. Doklady BAN 15 no.3:317-319 '62.

1. Submitted by Corresponding Member I. Milkovski.

KUDREV, Todor; PAVLOV, Petur

Influence of the drying up of swollen and germinated seeds
and plants in the fall on the development and yield of the
wheat. Sel'skostop nauka 2 no.1:117-123 '63.

KUDREV, T.G.; TENEV, A.S.

Attempt to diminish the injurious consequences of low winter temperatures by means of vitamins and growth substances. Biologia plantarum 7 no.1:13-19 '65.

1. Institute of Plant Production, Sofia, and Wheat and Sunflower Institute, General Toshevo. Submitted May 13, 1964.

I 02142-67 NO
ACC NR: AP6035986

SOURCE CODE: BU/0011/65/018/003/0261/0262

25
B

KUDREV, T., TYANKOVA, L., Plant-Growing Institute, Sofia

Effects of Soil Fertilization During the Treatment of Wilted Wheat
Plants with Certain Growth Substances*

Sofia, Doklady Bolgarskoy Akademii Nauk, Vol 18, No 3, 1965, pp 261-262

Abstract: (English article) On the basis of direct determination of the amount of assimilated nitrogen (Compt. rend. Acad. bulg. Sci., 15, 1962, No 2, 219-221) and analyses of the plants for nitrogen and phosphorus content, the authors established that the need for nutrients increases during the treatment with growth substances of wilted plants for the purpose of their restoration. Since restoration also depends on the availability of the needed nutrients, the authors carried out fertilization effect experiments using the Bulgarska No. 301 wheat variety. This brief note describes the experiments and reports on favorable response of wilted wheat to combined soil fertilization and IAA or 2,4-D growth substance treatment. This paper was presented by Corresponding Member Y. Milkovsky on 25 November 1964. Orig. art. has: 1 table. [JPRS]

TOPIC TAGS: fertilizer, wheat, nutrition, plant chemistry, plant growth/No. 301 wheat

SUB CODE: 06, 02 / SUBM DATE: 25Nov64 / ORIG REF: 001

Card 1/1 *SLH*

0922 0510

Plant Physiology

BULGARIA

KUDREV, T. G., Institute of Genetics and Plant Selection, Sofia

"The Effect of Drought on the Amount of Free and Bound Glutamic Acid and Proline in Pumpkins"

Sofia, Doklady Bolgarskoy Akademii Nauk, Vol 20, No 1, 1967, pp 61-63

Abstract: [English article] The changes in the amount of the free and bound glutamic acid and proline in the course of the drought to which the plants were subjected has been studied. These two amino acids were selected on account of their different solubility in water. The experiments were made with leaves of pumpkin Cucurbita maxima L. The plants were cultivated in a greenhouse. The paper describes the experimental procedures and presents the results which show, among other things, that the release of the various nonidentical bound amino acids does take place with the same speed; the protein substances thus undergo deep qualitative changes as a result of the drought. There exists also a certain connection between the increase in the content of free proline and the reduction in the amount of bound proline.

References: 1 Bulgarian, 1 Soviet, and 8 Western. (Manuscript received, 20 Sep 66.)

1/1

Laboratories-Apparatus and Supplies

Utilization of T-tubes in homemade apparatus. Khim. v shkole No. 1, 1952

9. Monthly List of Russian Accessions, Library of Congress, October 1952. Unclassified.

KUDREVATOV, B. K. *STRUCTURES AND PROBLEMS*

B-I-1

ac

Analyse of calcium fluoride. A. K. KRASAVATOV
 (Comp. rend. Acad. Sci. U.R.S.S., 1934, 4, 43-45).—
 CaF_2 is readily dissolved in concentrated HCl on heating in
 presence of chlorides; Mg and Li chlorides are best
 used for analysis because of the solubility of their oxalates
 in H_2O . A. B. D. C.

A. B. D. C.

1.0.3.1.1. METALLURICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000827120014-6"

KUDREVATOV, A.K. (g. Fergana).

Demonstration of the solubility of hydrogen chloride in water. Khim. 7
shkole no. 3:60 My-Je '53. (MLRA 6:7)
(Hydrogen chloride)

KUDREVATOV, G.

Approximate determination of the roots of an equation. Uch. zap.
MOPI 123:241-258 '63. (MIRA 17:4)

KUDREVATOV, G.A. (Fergana)

Equations containing the unknown with the sign of absolute
magnitudo. Mat. v shkole no.3:73-78 My-Je '62. (MIRA 15:7)
(Mathematics--Problems, exercises, etc.)

L 23868-65 EWT(1)/EWG(k)/EPA(ep)-2/EPA(w)-2/EEC(t)/T/EEC(b)-2/EWA(a)-2
Fr-6/Po-4/Pab-10/Pl-4 IJP(o) DM/AT

ACCESSION NR: AP5003998

S/0089/65/018/001/0014/0018 B

AUTHOR: Vekseler, V. I.; Gekker, I. R.; Gol'ts, E. Ya; Dolone, G. A.; Kononov, B. P.;
Kudrova, O. V.; Luk'yanchikov, G. S.; Rabinovich, M. S.; Savchenko, M. N.; ~~Sukharev,~~
~~A. A.~~; Sergovych, K. F.; Silin, V. A.; Tsopp, Yu. E.

TITLE: Interaction of plasma bunches with an electromagnetic wave

SOURCE: Atomnaya energiya, v. 18, no. 1, 1965, N-18

TOPIC TAGS: plasma clot, plasma clot acceleration, plasma clot
radiative acceleration, H sub 01 wave, H sub 11 wave

ABSTRACT: Preliminary experimental results are given of an investigation of the radiative acceleration of plasma in circular waveguides. The investigation was conducted in a 10-cm range with H₀₁ and H₁₁ waves. Different plasma injectors were used. Plasma bunches with an initial particle concentration of 10¹² cm⁻³ and higher were injected with a 5 x 10⁶ cm/sec velocity from a spark source or were generated directly on the axis of the waveguide by means of a plasma source at a pressure drop of 10⁻⁷—10⁻⁶ mm Hg of the operating vacuum in an accelerator. Electric detectors, superhigh-frequency methods, and an electrostatic analyser of particle energy were used for the investigation.

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ACCESSION NR: AP5003998

O
tion. External magnetic fields with various configurations were used to confine the plasma. Accelerated ions with energies exceeding 10 kev were obtained regardless of the type of wave in the waveguide or the kind of plasma injector. The energy of the accelerated ions increased as the superhigh-frequency power increased. The total number of accelerated particles was of the order of 10^{12} . Maximum energy was 30 kev. The application of nonhomogeneous fields for the stabilization of the transverse dimensions of plasma bunches was shown to be feasible. There were practically no plasma losses on the waveguide walls when quadrupole or sextupole magnetic fields were used. Orig. art. has 7 figures. [JA]

ASSOCIATION: none

SUBMITTED: 22Apr64

ENCL: 00

SUB CODE: ME,EM

NO REF Sov: 008

OTHERS: 001

ATD PRESS: 3178

Card 2/2

L 2156-66 EPP(s)/EPA(w)-2/EXT(1)/EXT(m)/EXP(1)/T/EXA(m)-2/EXP(s) IJP(s) WH
ACC NR: AP5028018 SOURCE CODE: UR/0366/65/002/008/0377/0380

AUTHOR: Voronov, G. S.; Delone, G. A.; Delone, N. B.; Kudrevatova, O. V. 90
44, 55 44, 55 44, 55 44, 55

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences, SSSR (Fizicheskiy
institut Akademii nauk SSSR) B

TITLE: Multiphoton ionization of a hydrogen molecule in a strong electric field of
ruby laser radiation

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu
(Prilozheniya), v. 2, no. 8, 1965, 377-380

TOPIC TAGS: ionization, ion, ionization potential, negative ion, positive ion

ABSTRACT: An investigation was made of the multiphoton ionization of a hydrogen molecule under the effect of ruby laser radiation at an intensity of the electric field of $E \sim 10^7$ v/cm. The ratio between the ionization potential ($I = 15.43$ ev) and the quantum energy ($h\nu = 1.79$ ev) shows that ionization can result from absorption of nine quanta. The following results characterize the multiphoton ionization of a hydrogen molecule. The number of quanta whose absorption probability determines the probability of ionization is $K = 7.67 \pm 0.36$. This number was obtained from the dependence of the number of generated molecular ions N_i on the number of photons N_j which passed through the focusing region. The probability of the multiphoton ionization of a hydrogen molecule resulting in the formation of a molecular ion is

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L 6756-66

ACC NR: AP5028018

$W = 10^{6.3 \pm 1.5} \text{ sec}^{-1}$ at a field intensity $E = (1.1 \pm 0.3) \times 10^7 \text{ v/cm}$ (photon flux $F = 10^{30.0 \pm 0.2} \text{ cm}^{-2} \cdot \text{sec}^{-1}$). A probability of absorption of less than nine quanta determines the probability of ionization of a hydrogen molecule. Calculations based on the theory of multiphoton ionization of atoms when applied to a hydrogen molecule show that the experimentally observed probability $W = 10^{6.3} \text{ sec}^{-1}$ of an eight-photon process can take place in an electric field with an intensity of $E = 8.5 \times 10^7 \text{ v/cm}$, which exceeds the experimental value of $E = 1.1 \times 10^7 \text{ v/cm}$. In a strong field both the molecular ions H_2^+ and the atomic ions H^+ are generated. At a field intensity of $E \approx 1.2 \times 10^7 \text{ v/cm}$ the ratio of the generated ions is $10 \leq N(\text{H}_2^+)/N(\text{H}^+) \leq 100$. Atomic ions can be generated by dissociating a molecule with the subsequent ionization of neutral atoms or by ionizing a molecule followed by dissociation of a molecular ion. Orig. art. has: 2 figures. [JA]

SUB CODE: NP/ SUBM DATE: 27Aug65/ ORIG REF: 003/ ATD PRESS: 4143

Card 212 Rdd

TITLE: Radiational acceleration of plasma 1. vi. 55

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. 4/55
Trudy. Moscow, Atomizdat, 1964, 1017-1022

TOPIC TAGS: high energy accelerator, plasma acceleration, plasma waveguide

ABSTRACT: The practical realization of the radiational method of plasma acceleration (Veksler, V. I. CERN Symposium, 1956; *Atonnaya energiya* 2, 427, 1957) is connected with the utilization of a different kind of waveguide structure, within which a plasma bunch moves under acceleration by an electromagnetic field. Two such waveguide structures, differing in type of accelerating wave and in method of plasma injection, were produced recently in the Physics Institute, AN SSSR. Initial experiments showed that radiational acceleration of plasma was achieved in both of the structures. At the same time the Radiotechnical Institute, AN SSSR,

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ACCESSION NR: AT5007972

6

carried out a theoretical study of the possibilities of the radiational method. The present report contains a brief exposition of all these investigations, under the two headings of: experimental results and theory of radiational acceleration. Both waveguide structures employed one and the same super high-frequency oscillator of 10 cm range which operated in the single-stage pulse regime of 8 micro-seconds duration; the average density of power flux through tube cross-section did not exceed $8 \cdot 10^3$ watts/cm², and the KSVN of the entire waveguide system (without plasma) was not worse than 1.3. The accelerating waveguides were tubes of circular cross-section with walls of noncorroding steel 1 mm thick; the vacuum in the tubes was of the order of 10^{-7} to 10^{-6} mm of mercury. The forces of the radiational pressure which act upon the plasma bunch are found by proceeding from the conservation laws. In the plane electromagnetic wave propagated in free space the density of pulse flux equals the average energy density. Orig. art. has: 7 figures, 26 formulas.

ASSOCIATION: Fizicheskiy institut imeni P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR); Radiotekhnicheskiy institut AN SSSR (Radio Engineering Institute, AN SSSR)

SUBMITTED: 26 May 84

ENCL: 00

SUB CODE: NP

NO REF Sov: 008

OTHER: 003

DVK
Card 2/2

VORONOV, G.S., DELONE, G.A.; DELONE, N.B., KUREVATOVA, G.V.

Multiphoton ionization of the hydrogen molecule in a strong electric field of radiation of a ruby laser. Fiz', v red.
Zhur. ekspер. i teoret. fiz. 2 no.8:377-380 ('65.)

(MFA DP-12)

I. Fizicheskiy institut imeni P.N. Lebedeva AN SSSR.
Submitted August 27, 1965.

POZDNOV, S.S.; LEVINA, L.G.; KUDREVATYKH, A.I.

Treatment of chronic angiocholecystitis at Arshan Health Resort.
Sbor. nauch. rab. vrach. san.-kur. uchr. profsoiuzov no.1:126-131
'64. (MIRA 18:10)

1. Kafedra fakul'tetskoy terapii Irkutskogo meditsinskogo instituta
(zaveduyushchiy kafedroy - S.S.Pozdnov).

~~SECRET~~

Japan - Description and Travel

In a Japanese village, Vokrug sveta 91 No. 4, 1952

9. Monthly List of Russian Accessions, Library of Congress, July 1952. Unclassified.

VIRHYSKIY, O.; KUDREVATYKH, L.: IEROV, L.M., redaktor; RAZGULYAYEVA, N.O.,
tekhnicheskij redaktor

[Through Czechoslovakia] Po Chekhoslovakii. Moskva, Izd-vo "Pravda,"
1956. 46 p.
(MLRA 9:8)
(Czechoslovakia--Description and travel)

KUDREVATYKH, Leonid Aleksandrovich; KRAVCHENKO, P., red.

[Japanese notebook] Iaponskie zapisи. Moskva, Izd-vo "Pravda,"
1960. 62 p. (Biblioteka "Ogonek," no.29). (MIRA 13:6)

1. Chlen Komministicheskoy partii Sovetskogo Soyuza (for Kudrevatykh).
(Japan--Description and travel)

CHERNENKO, M.B.; LUKIN, Yu.B.; GUSEV, K.M.; KUDREVATYKH, L.A.; MAKARENKO,
Ya.I.; SATYUKOV, P.A., red.; STEPANOV, V.P., red.; SELYUK, S.I., red.;
SUTOTSKIY, S.B., red.; ABALKIN, N.A., red.; KOZEV, N.A., red.; AVER-
CHENKO, B.Ye., red.; SOBOLEV, L.S., red.; SIMONOV, K.M., red.; POLE-
VOY, B.N., red.; GALIN, B.A., red.

[Heroes of our times] Geroi nashikh dnei. Moskva, Izd. gazety
"Pravda," 1961. 619 p. (MIRA 14:11)
(Labor and laboring classes)

KUDREVATYKH, L.P.; SHIROKOVA, Z.I.

Friction welding of the cardan of a truck steering gear.
Avtom. svar. 18 no.3:73-74 Mr '65.

(MIRA 18:6)

KUDREVATYY, G., inzhener.

Modernization results on the diesel engine ship "Staryi Bol'shevik."
Mor.flot 16 no.5:17-19 My '56.
(MLRA 9:8)

1. TaPKB-1.

(Ships--Maintenance and repair)
(Staryi Bol'shevik (Ship))

KUDREVATYY, O.M., inzhener.

Determining tugboat resistance and capacity of the main engines in
small vessels. (From "Schiffbautechnik" no. 1, no. 10, no. 12, 1955).
Sudostroenie 22 no.7:38-41 J1 '56. (MLRA 9:10)

(Ship resistance) (Tugboats)

KATSMAN, F.M., inzhener; KUDREVATYY, G.M., inzhener.

Industrial methods of measuring the propeller pitch ratio.
Sudostroenie 23 no.3:47-51 Mr '57. (MLRA 10:5)
(Propellers--Measurement)

KUDREVATYY, Georgiy Mikhaylovich.; POPOV, Yu. N., red.; MELEVYEV, A.S., red.izd-va;
LAVRENOVA, N.B., tekhn. red.

[Screw propeller data for marine engineers] Sudovomu mekhaniku-o
grobnykh vintakh. Moskva, Izd-vo "Morskoi transport," 1958. 153 p.
(MIRA 11:10)
(Propellers)

KATEMAN, Feliks Maksimovich; KUDREVATYY, Georgiy Mikhaylovich;
FISHEK, A.Z., inzh., retezent; FEDMAN, G.S., inzh.,
retsenzent; LUKOVNIKOV, A.A., nauchn. red.; KAZAROV,
Yu.S., red.; KOROVENKO, Yu.N., tekhn. red.

[Design of screw-propeller complexes for seagoing ships]
Konstruirovaniye vinto-ruleykh kompleksov morskikh sudov.
Leningrad, Sudpromgiz, 1963. 509 p. (MIRA 16:10)
(Propellers)

KATSMAN, F.M., inzh.; KUDREVATYY, G.M., inzh.

Ship propellers made of plastics. Biul.tekh.-ekon. inform.
Tekh.upr.Min. mor.flota 7 no.11:31-41 '62. (MIRA 16:9)

1. TSentral'noye proyektno-konstruktorskoye byuro No.1 Ministerstva
morskogo flota.
(Propellers)

KUDREVICH, Boris Ivanovich, zasl. deyatel' nauki i tekhniki RSFSR,
prof., doktor tekhn. nauk[deceased]; FORMAKOVSKIY, S.P.,
doktor tekhn. nauk, otv. red.; RIVKIN, S.S., doktor tekhn.
nauk, nauchnyy red.; OSTROUKHOV, Ya.G., doktor tekhn. nauk,
nauchnyy red.; SHAPIRO, M.V., kand. tekhn.nauk, nauchnyy red.;
KVOCHKINA, G.P., red.; SUSHKOVA, L.M., tekhn. red.

[Theory of gyroscopic instruments] Teoriia giroskopicheskikh
priborov; izbrannye trudy. Leningrad, Sudpromgiz. Vol.1. 1963.
(MIRA 16:5)
327 p. (Gyroscopic instruments)

Declassify

EBC-2/ENT(d)/FSS-2/EBC(k)-2/EWS(v)/EBC-4/EPD-2/ESA(c) Pg-4/

1964-1965 F1-4 SC
19683

BOOK EXPLOITATION

624.12.05

Borovitskii, Boris Ivanovich (Professor; Doctor of Technical Sciences)

A gyroskopicheskikh instrumentov: Sbornik sverkhtsifirovannykh materialov po zadaniyu po izucheniiu i issledovaniyu voprosa o pomehakh i zazemlyayushchim faktorom. Izdatelstvo "Radio i Svyaz", 1965. 295 p. illus.

TOPIC TACR: gyroscope, gyrocompass, gyrocompass theory, gyrocompass calibration, gyrocompass testing

PURPOSE AND COVERAGE: This book is intended for engineers and scientists interested in problems of applied gyrometry and for students in related disciplines. It is a posthumous edition which gives the author's views on the physical principles of instrument design and detailed accounts of the investigation of their precision and reliability of operation in various conditions.

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the first species of a new
genus leaves of gyrocoptopanax

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CIA-RDP86-00513R000827120014-6

KUDREVICH, G.V., insheper.

Modern design of a diaphragm pump. Vest.mash. 34 no.6:33 Je '54.
(Pumping machinery) (MLRA 7:7)

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000827120014-6"

KUDREVICH, O.V., inshener.

The MK-2 electric dump truck. Lit.proizv. no. 5:30-31 Je '56.
(MLRA 9:8)
(Dump trucks)

KULIKOVICH, I.A.

Kruglopedevoe vyrashchivanie ovoshchei [Year-round vegetable growing]. Moscow, Izdatelstvo Moskovskii rabochii, 1953. 72 p.

Su: Monthly List of Russian Acquisitions, Vol. 6 No. 1? March 1954.

KUDREVICH, I.A.

[Greenhouse cultivation of vegetables; practices of the "Pamiat Il'icha" Collective Farm in the Moscow area] Organizatsiya ovoshchevodstva zakrytogo grunta; opyt podmoskovnogo kolkhoza "Pamiat' Il'icha." Izd. 2., perer.i dop. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1957. 231 p. (MIRA 11:1)
(Greenhouse management) (Vegetable gardening)

ALEXANDROV, S.V., kand.sel'skokhoz.nauk; BOGUSHEVSKIY, A.A., kand.tekhn.
nauk; VASHCHENKO, S.Y., kand.sel'skokhoz.nauk; GERASIMOV, B.A.,
kand.sel'skokhoz.nauk; GROMOV, N.G. [deceased]; KORBUT, V.A.;
KUDREVICH, I.A.; MAMAYEV, M.G., kand.tekhn.nauk; NOVIKOV, A.P.;
OSNITSKAYA, Ye.A.; SIMANOVSKIY, A.Yu.; SLEPTSOV, S.A.; SPIRIDONOV,
A.I.; TARAKANOV, G.I., kand.sel'skokhoz.nauk; CHENYKAYEVA, Ye.A.;
KITAYEV, S.I., red.; FILATOV, N.A., zasluzhenny agronom RSFSR;
GRUDINKINA, A.P., red.; MARTYNOV, P.V., red.; ARTSYBASHEVA, A.P.,
tekhn.red.; BARBASH, F.L., tekhn.red.

[Vegetable growing under cover] Ovoshchеводство зашхishchennogo
grunta. Moskva, Izd-vo M-va sel'.khoz.SSSR, 1960. 279 p.
(MIRA 13:12)

(Vegetable gardening) (Greenhouses)
(Hotbeds)

PHASE I BOOK EXPLOITATION

SOV/5414

Nechayev, P. A., Engineer, A. A. Yakushenkov, Candidate of Technical Sciences, and N. B. Kudrevich, Engineer

Elektronavigatsionnye pribory (Electric Navigation Instruments)
Leningrad, Izd-vo "Morskoy transport," 1960. 496 p. Errata slip
inserted. 8,000 copies printed.

Special Ed.: D. N. Ikonnikov; Ed. of Publishing House: K.N. Denisov;
Tech. Ed.: L. P. Drozhzhina.

PURPOSE: This book is intended for students in the navigation departments of maritime academies and is composed in accordance with the program approved by the Ministry of Merchant Marine.

COVERAGE: The textbook presents elements of theory and the fundamentals of construction and operation of modern gyrocompasses used on ships of the fishing industry and merchant marine. Individual sections cover logs and sounding devices. The theoretical material of the book is based on elementary mathematics and is confirmed by consideration of the physical nature of the processes and phenomena

Card 1/12

Electric Navigation Instruments

SOV/5414

studied. The first part of the book, "Gyrocompasses", was written by Engineer P. A. Nechayev (Introduction, Chapters I, II, III, V, VI, VII, and VIII) and Candidate of Technical Sciences A. A. Yakushenkov (Chapters IV and IX); the second part, "Logs", was written by Engineer A. D. Kuznetsov, and the third part, "Sounding Devices", by Engineer N. B. Kudrevich. Also participating was Engineer V. Ya. Khodyrev who wrote sections 29, 30, 31, and 32. The authors thank D. N. Ikonnikov, docent, and Engineers A. F. Matsyuto, M. Ye. Ivanov, F. S. Boytsov, B. A. Grebenshchikov, and V. V. Kvokshe. No personalities are mentioned. There are 16 references, all Soviet.

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BOOK EXPLOITATION

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Nechayev, Pavel Aleksandrovich; Kudrevich, Nadezhda Borisova

Electric navigation instruments (Elektronavigatsionnye pribory) 2nd ed., rev. and enl. Moscow, Izd-vo "Transport," 1965. 495 p. illus., 5 fold, charts (in pocket). Errata slip inserted. 15,000 copies printed.

TOPIC TAGS: ship navigation, navigation aid, inertial navigation equipment, navigation compass, gyroscope, gyrocompass, gyroscope equipment, automatic navigator sonar equipment, sonar, acoustic detection equipment/Kurs gyrocompass, ADR automatic navigator, NEL sonar equipment

PURPOSE AND COVERAGE: This book is intended for students of navigation in schools of the Ministry of the Merchant Marine. It may also be used by navigators of transport and fishing fleets. The book is the second, revised and enlarged edition. The book deals with elements of the theory, (structural) design and operating instructions of modern gyrocompasses, automatic pilots, hydraulic logs, and fathometers (echo-sounding equipment). The introduction and the

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first part were written by P. A. Nechayev, the second and third parts, by N. B. Kudrevich, and Chapters V and XII by V. Ya. Khodyrev.

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AVAILABLE: Library of Congress

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L 1575-66
AH5023908

SUB CODE: NC
OTHER: 000

SUBMITTED: 22Mar65

NO REF SOV: 000

Card 10/100

AUTHOR Kudrevich, Ya. (Warsaw)

>Title Stability of nonlinear feedback systems

Publication information i telemekhanika, v. 25, no. 6, 1981, 1145-1155

Abstract The stability of nonlinear feedback systems is considered. A method is given for determining the stability of such systems.

Comments The value $|x|$ of the expression

$$|x| = \lim_{T \rightarrow \infty} \sqrt{\frac{1}{T} \int_0^T |x(t)|^2 dt} \quad (1)$$

is called the effective value of the signal x . It is shown that if $|x| < \infty$, which is equivalent to finite energy of the signal, then the system is stable. A condition for the existence of a bounded solution of the differential equation describing the input-output behavior of the system is given. This condition is expressed by the equation

$$x = f(x) + z,$$

1986-1987

It is proved that every solution of the equation $\Delta u = f$ in a bounded domain Ω is continuous at every point of Ω . The proof is based on the following lemma:

LEMMA. If u is a function defined in a bounded domain Ω and if $|u| \leq M$ in Ω , then there exists a constant C such that $|u(x) - u(y)| \leq C|x - y|$ for all $x, y \in \Omega$.

PROOF OF LEMMA. Let x_0 be a point in Ω . We can choose a point y_0 in Ω such that $|x_0 - y_0| = \delta$. Then we have $|u(x_0) - u(y_0)| \leq M\delta$. Now let x be any point in Ω . We can choose a point y in Ω such that $|x - y| = r$. Then we have $|u(x) - u(y)| \leq Mr$. Since $r < \delta$, we have $Mr < M\delta$. Therefore, $|u(x) - u(y)| \leq M\delta$ for all $x, y \in \Omega$. This completes the proof of the lemma.

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APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000827120014-6"

KUDREWICH, Ya. [Kudrewicz, J.] (Varshava)

Stability of nonlinear systems with feedback. Avtom. i telem.
25 no.8:1145-1155 Ag '64.
(MIRA 17:10)

KUDREVSKIY, A.I.

The PM-1 serial nuclear magnetometer. Geomag. i aer. 1
no.3:436-440 My-Je '61. (MIRA 14:9)

U. Institut zemnogo magnetizma, ionosfery i rasprostraneniya
radiovoln AN SSSR.
(Magnetometer)

"APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827120014-6

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827120014-6"

KUDREWICZ E.

5840

Kudrewicz E. A Narrow Band Elimination Filter Employing Piezoelectric Resonators. 3

„Wąskopasmowy filtr zaporowy z rezonatorami piezoelektrycznymi”. (Prace Inst. Tele-i Radiot. No. 1), Warszawa, 1958, ITR, 10 pp.

3 figs.

The application and technical requirements of narrow band elimination filters are discussed and a typical design given of such a filter. Owing to the introduction of a special frequency transformation, the index function is obtained in a form suitable for analysis. Resulting formulae are obtained in which theoretical cut-off frequencies of the attenuation band are related directly to minimal image attenuation and to border frequencies of the effective attenuation band. Formulae for calculating the elements of the filter are also derived. Finally, typical numerical values of parameters are given, useful in preliminary calculations.

621.392.52:621.390.811.2

SWS
11

KUDREWICZ, Edward, mgr inz.

Remarks on designing narrow-band stop filters with piezoelectric resonator. Prace Inst teletechn 7 no.2:59-68 '63

1. Państwowe Zakłady Teletransmisyjne, Warszawa.

KUDREWICZ, J.

Synthesis of linear parametrical two-terminal networks RC and
RL. Bul Ac Pol tech 7 no.12:689-696 '59. (EKA 9:6)

1. Communications Theory Department, Institute of Basic
Technical Problems, Polish Academy of Sciences. Presented by
P.Szulkin.

(Electric networks) (Calculus, Operational)

30567

P/019/61/010/001/002/006
D223/D305

9.3250 (1013)

AUTHOR: Kudrewicz, J.

TITLE: Analyzing the stability of an electrical non-linear network by methods of functional analysis

PERIODICAL: Archiwum elektrotechniki, v. 10, no. 1, 1961, 101-116

TEXT: The stability of an electrical system which consists of 3 elements in series; a non-linear four-terminal network F, an ideal amplifier with amplification factor λ and a linear four-terminal network K, operating in a closed feedback loop, is analyzed. The analysis is reduced to finding solutions of the equation $x = \lambda Kfx + w$, where K is a linear operator, f - a non-linear operator and x and w are the elements of Banach space $C(0, \infty)$. It is proved that the non-linear network is stable in Lyapunov's sense, namely if small oscillations $X(t)$ correspond to small initial conditions or more rigorously, if for any $\varepsilon > 0$ there is $\delta(\varepsilon)$ such that from $\|w\| < \delta$ there follows $\|x\| < \varepsilon$. The problem of non-parametric network formed from lump elements with parameters not depending on

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D223/D305

Analyzing the stability of an ...

time is dealt with in greater detail. Under such conditions the non-linear network is stable if the linearized network remains stable (A linearized network is one where the non-linear characteristic $f(x)$ of the four-terminal network F is replaced by $xf'(0)$). The stability may be analyzed by applying any known criterion, e.g. the Nyquist criterion. The magnitude of interference or initial amplitude for which the system is defined is found. The generalized theorem of linearization of a non-linear system is proved, namely, if a non-linear system is defined by $x = \lambda x + \omega$, where A is an operator in the sphere $\|x\| < p$ having at $x = 0$ the Frechet differentiable Bx , and residue $(A-B)$ satisfies the Lipschitz conditions $\delta(p) \rightarrow 0$ where $p \rightarrow 0$, then the network is stable in Lyapunov's sense, on condition that λ is a regular point of the linear operator B. Asymptotic stability of the network is examined; it depends on solving the equation for elements of the factor space $C(0, \infty)/N$, where N belongs to a class of functions which tend to zero as $t \rightarrow \infty$. The inequalities enabling one to plot asymptotic stability regions in the coordinate system (λ, p) are given. Thus any amplifier having an amplification factor λ represented in this region

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Analyzing the stability of an ...

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D223/D305

cannot generate undamped oscillations with amplitude ρ . This enables one to discuss the stability range and to calculate the amplitude of the generated oscillations as functions of the amplification factor λ . There are 8 figures and 5 Soviet-bloc references.

SUBMITTED: March 11, 1960

Card 3/3

4

KUDREWICZ, J.

On a certain method of stability testing of electric nonlinear
networks. Archiw elektrotech 10 no.2:335-367 '61.

12085

P/019/62/011/003/002/008
D289/U308

5/22/20

AUTHOR: Kudrewicz, J.

TITLE: Approximation of a non-linear network by a linear network

PERIODICAL: Archiwum elektrotechniki, v. 11, no. 3, 1962,
401-413

TEXT: The author deals first with a non-linear transmission system described by the equation $y = F(x)$ where x is the input signal and y the output signal. If the deviation of x from a constant signal x_0 is small, then F can be substituted by a linear approximation

$$F(x) \approx F(x_0) + dF_{x_0}(x - x_0)$$

where dF_{x_0} is a Frechet's differential of the operator F at the point x_0 . The second part of the paper deals with a network described by

$$P(x,y) = 0 \quad (23)$$

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approximation of a non-linear ...

P/019/62/011/003/002/008
D289/D308

The author finds the following linear approximation

$$y \approx y_0 - [d_y P(x_0 y_0)]^{-1} d_x P(x_0 y_0) (x - x_0) \quad (28)$$

where $d_y P(x_0 y_0)$ and $d_x P(x_0 y_0)$ are partial Frechet's differentials of the operator P at point $x_0 y_0$. An evaluation of the error made in this approximation is given. Examples of application of the results are given. There are 2 figures.

ASSOCIATION: Zakład teorii łączności, IPPT PAN (Department of Telecommunication Theory, IPPT PAS)

SUBMITTED: September 27, 1961

Card 2/2

KUDREWICZ, J.

On energy relations in nonlinear two-poles. Buc Ac Pol tech 10 no.10:
603-611 '62.

1. Department of Electronics, Institute of Fundamental Technical Probléms,
Polish Academy of Sciences, Warsaw. Presented by J. Groszkowski.

KUDREWICZ, Jacek

Application of functional analysis methods in studies on the stability
of nonlinear electric circuits. Rozpr elektrotechn 9 no.1/2:3-58
'63.

1. Zaklad Teorii Lacznosci, Instytut Podstawowych Problemow Techniki,
Polska Akademia Nauk, Warszawa.

KUDREWICZ, Jacek

Stability of nonlinear sampled data pulse systems. Archiw automat
9 no.3:257-271 '64.

1. Institute of Automation of the Polish Academy of Sciences,
Warsaw.

KUDREWICH, Ia. [Kudrewicz, J.]

Positive operators and stability conditions of dynamic systems.
Bul Ac Pol tech 12 no.12:921-944 '64.

1. Institute of Automation of the Polish Academy of Sciences,
Warsaw. Submitted October 2, 1964.

ACC NR: AP7001172 SOURCE CODE: PO/0031/66/011/004/0373/0389

AUTHOR: Kudrewicz, Jacek -- Kudrevich, Ya.

ORG: Laboratory of the Theory of Optimization, Institute of Automation, PAN
(Zaklad Teorii Optymizacji, Instytut Automatyki PAN)

TITLE: Generation of periodic oscillations in nonlinear control systems

SOURCE: Archiwum automatyki i telemechaniki, v. 11, no. 4, 1966, 373-389

TOPIC TAGS: automation, nonlinear control system, telemechanics, optimization,
control system optimization, ~~feedback-control system~~, ~~feedback-periodic~~
~~oscillation~~, ~~frequency bifurcation~~, amplitude, oscillation equation, harmonic
determination, contractive mapping method, OSCILLATION, ELECTRONIC
FEEDBACK, PERIODIC SOLUTION

ABSTRACT: Periodic oscillations in feedback systems which are described by
the integral equation

$$x(t) = \mu \int_0^\infty f[x(t-\tau)] k(\tau) d\tau$$

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ACC NR: AP7001172

were investigated, and the dependence of the solution of the equation on the gain factor μ discussed. It was shown that a bifurcation point μ_0 exists in a one-sided neighborhood whose equation has non-trivial periodic solutions. Formulae giving the amplitude and frequency of small oscillations dependent on μ and the

$K(\omega)$ function were derived, and the soft and hard generation of oscillations in the case of symmetric and nonsymmetric characteristics of $J(x)$ was discussed. The proposed solution consists of reducing the integral equation to an infinite system of equations with regard to the Fourier coefficients of the $s^{(n)}$ function. Assuming an arbitrary amplitude of the first harmonic, it is possible to determine all remaining harmonics using the contractive mapping method. Orig. art. has: 5 figures and 63 formulas. [Based on author's abstract] [DR]

SUB CODE: 09, 12, 13/SUBM DATE: 05Feb66/ORIG REF: 002/SOV REF: 002/
OTH REF: 001/

Card 2/2

KUUKI .

Cream Separators

Structural defects of the separator OS6E. Mol. prom. 13, no. 7, 1952.

9. Monthly List of Russian Accessions, Library of Congress, October 1952. Unclassified.

KUDRIAVTEV, I.V.; ALEKSANDROV, B.I.

Cold-hammering influence on high temperature and fatigue resistance
of thermostable and refractory steels. Studii tehn Timisoara 9
no.3/4:293-307 Jl-D '62.

KUDRIAVTSEV, P.N., prof., dr agric.sc.

Method of swine breeding by use of the estimation of sows and
boars according to the data of planned fattening and slaughtering
of the progeny. Zesz probi post nauk roln no.43:65-84 '63.

1. Head, Department of Swine Breeding, All-Union Institute of Animal
Breeding, Moscow Province, Dubrovitsi.

KUDRIK, S. [Kudryk, S.]

Provide collective farms of the district with an adequate supply of wall materials. Sil' bud. 7 no.4:8-9 Ap '57.
(MIRA 12:11)

1. Olova radi Glukhiv's'koj rayonnoj kolgospnoj budivel'noi organizatsii.
(Glukhov District--Building materials)

24(6), 18(7)

SOV/126-7-2-11/39

AUTHORS: Geguzin, Ya. Ye. and Kudrik, V. I.

TITLE: Investigation of the Creep of Metals and Alloys
(Issledovaniye kripa metallov i splavov).
4. Creep of Lead-Base Alloys (Krip splavov na
svintsovoy osnove)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1959, Vol 7, Nr 2,
pp 235-242 (USSR)

ABSTRACT: The experimental apparatus used in this work differed from the one described earlier (Ref 3) only by the fact that suspension devices were provided for two threads and with them two independent drums with mirrors. This enabled the kinetics of creep of two specimens to be observed simultaneously under identical conditions. Two specimens of the same alloy were installed in the apparatus, one specimen was thoroughly annealed and the other plastically deformed. Metals of the following purity were used as basic materials: Pb - 99.994%; Sn - 99.98%; Cd - 99.94%; Sb - 99.90%. The threads were obtained by extruding the alloys through a steel die of 0.5 mm dia. Prior to testing the threads were given a Card 1/6 homogenizing anneal for two hours (above the testing

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Investigation of the Creep of Metals and Alloys

temperature). The formation of the threads of 0.5 mm dia. was carried out by pressing them into ribbons of 0.1 mm thickness between two polished steel plates. The test was carried out as follows: Up to the temperature of isothermal soaking, the specimens were heated at a constant rate 5°C/min, after which they were isothermally soaked for 3.5-4 hours. A specific load of approximately 3 kg/cm² was applied to the specimens in the experiments, i.e. a load which is considerably lower than the elastic limit of the alloys in the temperature range at which the tests were carried out (Ref 4). In order to be able to calculate correctly the temperature behaviour (elongation as a result of thermal expansion on heating) from the curve within the coordinates ($\Delta L/L$)-t, experiments for the determination of the relationship between concentration and the coefficient of linear expansion were carried out for all investigated alloys, using massive (3 mm dia), thoroughly annealed specimens. As shown in the calculation, the relative error in the determination of the viscosity η was 3.5%. All the

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Investigation of the Creep of Metals and Alloys

experiments were carried out in a vacuum of 10^{-2} to 10^{-3} mm Hg col. The following alloys were investigated:

The Pb-Cd system	Pb + 1 at.% Cd;	Pb + 3.5 at.% Cd;
	Pb + 2 at.% Cd;	Pb + 5 at.% Cd;
" Pb-Sn	" Pb + 5 at.% Sn;	Pb + 20 at.% Sn;
	Pb + 10 at.% Sn;	Pb + 25 at.% Sn;
" Pb-Sb	" Pb + 1 at.% Sb;	Pb + 3.5 at.% Sb;
	Pb + 2 at.% Sb;	Pb + 5 at.% Sb.

From each experiment two curves were obtained which described the behaviour of a deformed and an undeformed specimen. On each of these curves there was one portion which corresponded to the heating period and one corresponding to isothermal soaking. In Figs 1,2 and 3 typical experimental curves are shown which were obtained in experiments with alloys belonging to various systems. In these figures the curves I refer to undeformed and curves II to deformed specimens. The curves obtained were also used for determination of the dimension of the scale and the magnitude of elongation

Card 3/6 due to creep associated with deformation. Curve III

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Investigation of the Creep of Metals and Alloys

(Figs 1,2 and 3), which describes this contribution, has been obtained by graphic deduction from curves I and II. In Fig 4 the dependence of the toughness of a specimen in equilibrium, a) on the true concentration and b) on the relative concentration is shown. In Fig 5 the dependence of the toughness of a deformed specimen on the relative concentration is shown. In Fig 6 the dependence of $\Delta L/L_0 = \varphi(t)$ on the relative concentration is shown. In Fig 7 the relationship $\Delta L/L_0 = \varphi(t)$ for a Pb(80%)-Sn(20%) alloy at 180°C is shown: 1 - undeformed specimen annealed at 185°C for two hours; 2 - after supplementary annealing at 185°C for 5.5 hours; 3 - after supplementary annealing at 190°C for one hour. In Fig 8 curves for the dependence of t_H on the relative concentration of the solid solution are shown. In Fig 9 curves for the dependence of t_H on the true concentration of the solid solution are shown. In Fig 10 the dependence of δ_H on the

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Investigation of the Creep of Metals and Alloys

true concentration of the solid solution is shown. As a result of their experiments, the authors have arrived at the following conclusions:

1. As the alloy element content of the solid solution increases, its deformation occurring during creep is facilitated, i.e. the effective toughness decreases whereas plastic deformation becomes more difficult.
2. From the investigated alloys it has been found that the rate of creep of the solid solution alloy, the lattice of which is in equilibrium or in quasi-equilibrium, is determined not by the true concentration of the alloy elements but by the degree of saturation of the solid solution.
3. The results of creep experiments with plastically deformed specimens are discussed on the basis of the theory of exhaustion, which occurs during dislocation creep. It has been found that, for the same degree of deformation, dislocation regions with a lower activation energy for the healing process appear in the

Card 5/6 investigated solutions as the concentration of the

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Investigation of the Creep of Metals and Alloys

solvent element increases.

There are 10 figures and 8 references, 5 of which are Soviet, 3 English.

ASSOCIATION: Kharkovskiy gosudarstvennyy universitet imeni
A. M. Gor'kogo (Khar'kov State University imeni
A. M. Gor'kogo)

SUBMITTED: June 19, 1957

Card 6/6

YUSHPEY, M.K., inzh.; KUDRIKOV, Ye.D., inzh.

Joining tubes to tube plates in high-pressure apparatus. Khim. i
neft. mashinostr. no.9:32-33 S '65.

(MIRA 18:10)

ACC NR: A60020098

(N)

SOURCE CODE: UR/903h/66/000/05h/0003/0003

AUTHOR: Kudrin, A. (Professor; Head of the pharmacology dept of the pharmaceutical faculty)

ORG: Department of Pharmacology [Director—Prof. A. Kudrin], Pharmaceutical Faculty, First Moscow Medical Institute (Kafedra farmakologii farmatsevticheskogo fakul'teta Pervogo Moskovskogo meditsinskogo instituta imeni I. M. Sechenova)

TITLE: Chemical compounds and living structures

SOURCE: Meditsinskaya gazeta, 05Jul 66,^{no. 54,} p. 3, col. 1—4

TOPIC TAGS: pharmacology, toxicology, physiology, drug, drug effect

ABSTRACT:

Some of the most important problems of pharmacology are related to incomplete knowledge of the effect of physiologically active chemical compounds on given organs and tissues. The precise chemical and physical relationships of dose and effect present many problems. Current research interests center around large molecular compound research, intervals between drug administration and reaction and reasons for them, ranges of effectiveness including minimum effective doses or, in the case of toxicology, minimum lethal doses, establishment of toxicological spectra for new compounds, and future synthesis of new drug materials. Organic selenium compounds

Cord 1/2

ACC NR: AP6020698

and their sulfur analogs are being studied for their antihistamine properties
at the Department of Organic Chemistry of Moscow State University and the
First Moscow Medical Institute.

[W.A. 50; CBE No. 10]

SUB CODE: 06/ SUBM DATE: none/

CONFIDENTIAL

KUDRIN, A.

New forms of work organization on automatic looms. Sots. trud 7
no.10:123-128 O '62. (MIRA 15:10)

1. Nachal'nik normativno-issledovatel'skoy laboratori po
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(Ivanovo Province—Textile industry—Labor productivity)
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KUDRIN, A.G.

Peptic ulcer of the stomach and duodenum in chronic lymphatic
leukemia. Vest.rent.1 rad. 35 no.1:57-59 Ja. F '60.

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(PEPTIC ULCER compl.)
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Investigating parameters of pressureless hydraulic transportation of coal, rock, and their mixtures. Trudy VNIIGidrogeologii
No.3:105-118 '63 (MIRA 18:2)

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Calculating the strength of torispherical shells. Sudostroenie 26
no.10:9-14 0'60. (MIRA 13:10)
(Pressure vessels)

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D241/D305

AUTHORS: Kudrin, A.I., Candidate of Technical Sciences, and
Piskovitina, I.A., Engineer

TITLE: Calculating the strength for box type bottoms with
various conditions of fixing the supporting contour

PERIODICAL: Vestnik mashinostroyeniya, no. 3, 1961, 17-24

TEXT: The article is based on the supposition that stresses in
the shell tend to attain the magnitudes given by the momentless
theory, when moving away from the edges of the shell. To deter-
mine stresses due to edge effect, use is made of approximate ex-
pressions for forces, moments and displacements in a symmetric-
ally deformed shell quoted by V.V. Novozhilov (Ref. 1: Teoriya
tonkikh obolochek (Theory of Thin Shells), Sudpromgiz, 1951)
The constants which enter into the moments are determined from
the conditions of conjugation between a part of the torus with a
spherical segment on one edge, and either a conical or cylindrical
shell - on the other. These conditions are reduced to the require-
ments

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ment of equality of angle of turning, displacements and forces that are normal to the axis of the shell, as well as the bending moments along the common edge of two shells. When the dished bottom is connected to an elastic ring, then the limit conditions for the supporting contour require the equality of displacements and angles of turning of the ring and the toroidal part of the bottom. When fixing the dished bottom along the rigid contour, then the limit conditions are assumed in relation to the character of this mounting (register, hinge or free support). The stresses in the circumferential and meridional sections of toroidal and spherical shells or in the cross and longitudinal sections of conical as well as cylindrical shells are determined according to the obtained values of forces and moments and using

$$\sigma_1 = \pm \frac{6M_1}{\rho^2} + \frac{pR_1}{25} \quad (1)$$

and

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$$\sigma_2 = \frac{T_2}{\delta} \pm \mu \frac{6M_1}{\delta^2} \quad (2)$$

where M_1 is the moment in the meridional sections; p is the pressure from the convex side of the bottom; R_2 is the principal radius of the corresponding shell; T_2 is the ring pressure. The article quotes equations for calculating stresses in dished bottoms for various methods of fixing the supporting contour, and which present the greatest practical interest. Equations are evolved for bottoms connected to conical shells (abruptly), assuming that their thicknesses are different. The solution of boundary transfers provides equations for bottoms connected by a smooth line to a conical shell, as well as for the case when their thicknesses are equal. The same solution gives the equations for calculating the strength of the bottom joined to a cylindrical shell of various thicknesses. The results of calculations demonstrated

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sufficient accuracy. They were also confirmed by measuring stresses during the tests of bottoms. In the equation of moments for the toroidal section (conical), connected without a flow line to the dished end, there is an integral of complex value. Its magnitude for various angles of the spherical segment is given graphically. When the ratio $\frac{r_0}{r} \rightarrow 0$, then T_2 tends to increase to infinity.

and it is impossible to assume that the division of the main stress into a momentless as well as edge effect stresses is not valid. Calculations by the method of Novozhilov of a dished end joined to a cylindrical shell showed that the ring stresses have

finite values when ratio $\frac{r_0}{r}$ decreases. They reach minimum if $\frac{r_0}{r} = 0$. The ring forces T_2 in the torus of the bottom and in the adjacent shell can be calculated for $\frac{r_0}{r} > 0.2$. The ring stresses

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in the case of a sphere are given by

$$T_2 = (A_3^0 \cos \gamma_1 + A_4^0 \sin \gamma_1) e^{\gamma_1} - \frac{pR}{2} \quad (7)$$

In the case of a cone,

$$T_2 = (C_1^0 \cos \gamma_3 - C_2^0 \sin \gamma_3) e^{-\gamma_3} - p r_k \quad (8)$$

is used. The total stresses in the bottom and the conical shell are obtained by

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$$\left. \begin{aligned}
 \sigma_1 &= \pm 0.455 \frac{pr}{\delta} \left[K \sin(\eta_0 - \eta_1) e^{-(\eta_0 - \eta_1)} + \right. \\
 &\quad \left. + \frac{C}{\sin^2 \theta_1} \sin \eta_1 e^{-\eta_1} \right] - \frac{pR_1}{2\delta}; \\
 \sigma_2 &= -0.25 \frac{pr}{\delta} \left[K \cos(\eta_0 - \eta_1) e^{-(\eta_0 - \eta_1)} + \right. \\
 &\quad \left. + \frac{C}{\sin^2 \theta_1} \cos \eta_1 e^{-\eta_1} \right] + \frac{pR_1}{2\delta} \times \\
 &\quad \times \left(\frac{R_1}{r_0} - 2 \right) \pm 0.137 \frac{pr}{\delta} \times \\
 &\quad \times \left[K \sin(\eta_0 - \eta_1) e^{-(\eta_0 - \eta_1)} + \right. \\
 &\quad \left. + \frac{C}{\sin^2 \theta_1} \sin \eta_1 e^{-\eta_1} \right].
 \end{aligned} \right\} \quad (9)$$

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